FIG.1

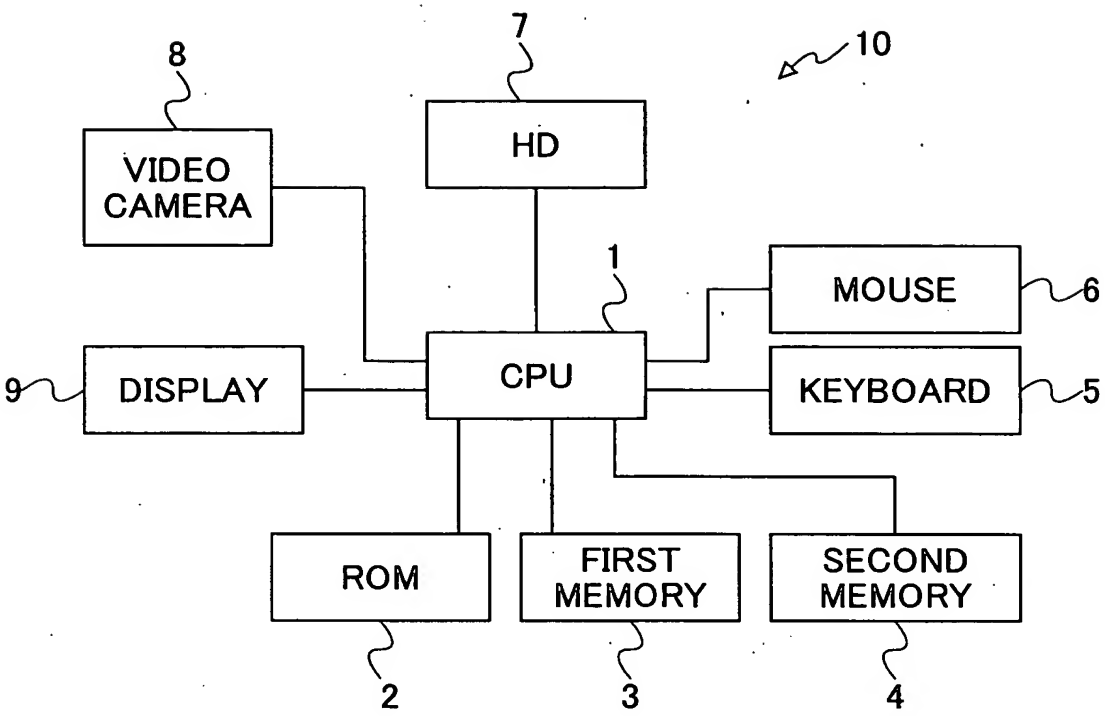

8
7
10
VIDEO CAMERA
HD
1
MOUSE
6
9
DISPLAY
CPU
KEYBOARD
5
ROM
FIRST MEMORY
SECOND MEMORY
2
3
4

FIG.2

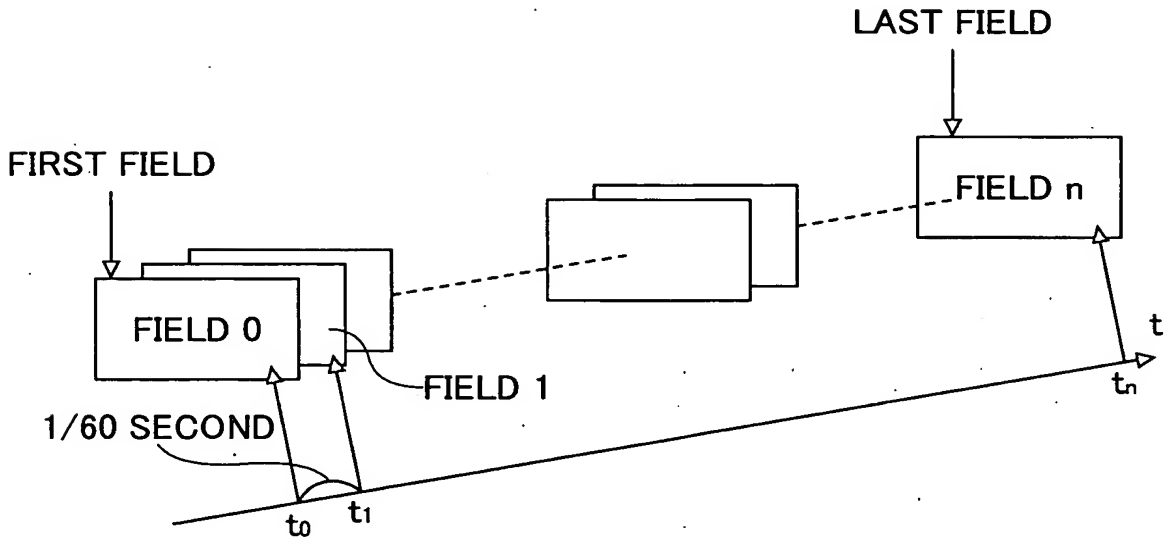
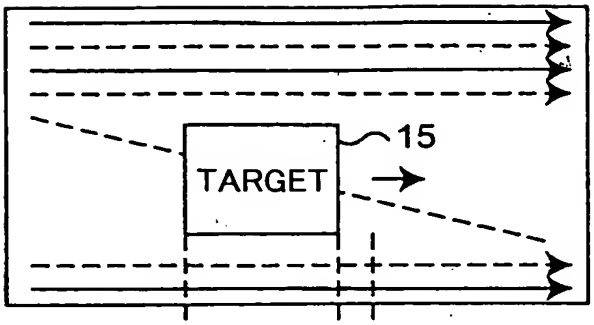

LAST FIELD
FIRST FIELD
FIELD n
FIELD 0
FIELD 1
t
1/60 SECOND
t_n
t_0
t_1

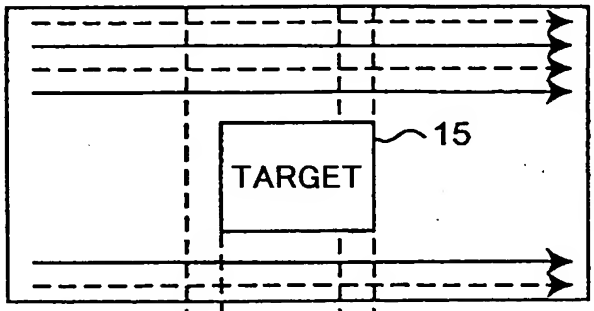
FIG.3A



INTERLACED
IMAGE A
(FIELD 0)

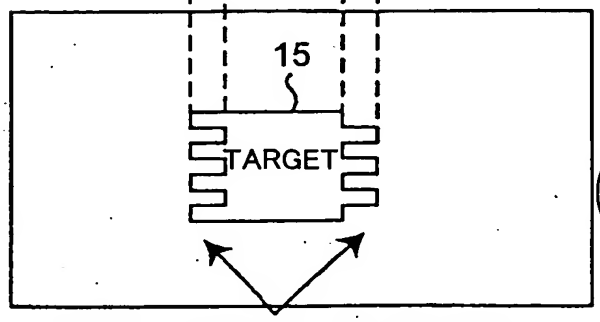
AFTER
1/60 SECOND

FIG.3B



INTERLACED
IMAGE B
(FIELD 1)

FIG.3C



NON-INTERLACED
IMAGE
(INTERLACED IMAGE A +
INTERLACED IMAGE B)

TOOTH-SHAPED DISTORTION

FIG.4

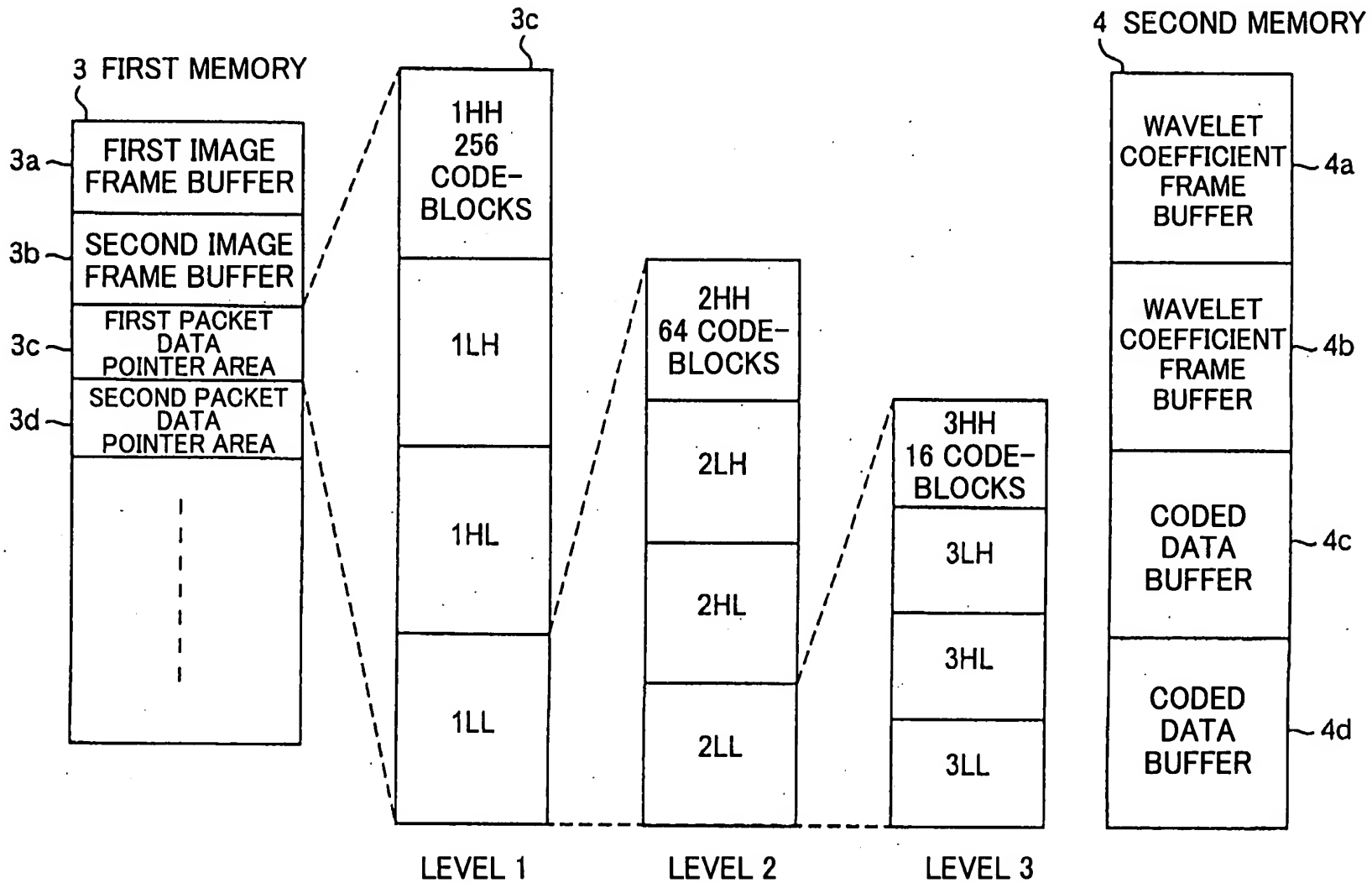

3 FIRST MEMORY
3a
FIRST IMAGE FRAME BUFFER
3b
SECOND IMAGE FRAME BUFFER
3c
FIRST PACKET DATA POINTER AREA
3d
SECOND PACKET DATA POINTER AREA
3c
1HH 256 CODE-BLOCKS
1LH
1HL
1LL
2HH 64 CODE-BLOCKS
2LH
2HL
2LL
3HH 16 CODE-BLOCKS
3LH
3HL
3LL
LEVEL 1
LEVEL 2
LEVEL 3
4 SECOND MEMORY
WAVELET COEFFICIENT FRAME BUFFER
4a
WAVELET COEFFICIENT FRAME BUFFER
4b
CODED DATA BUFFER
4c
CODED DATA BUFFER
4d

FIG.5

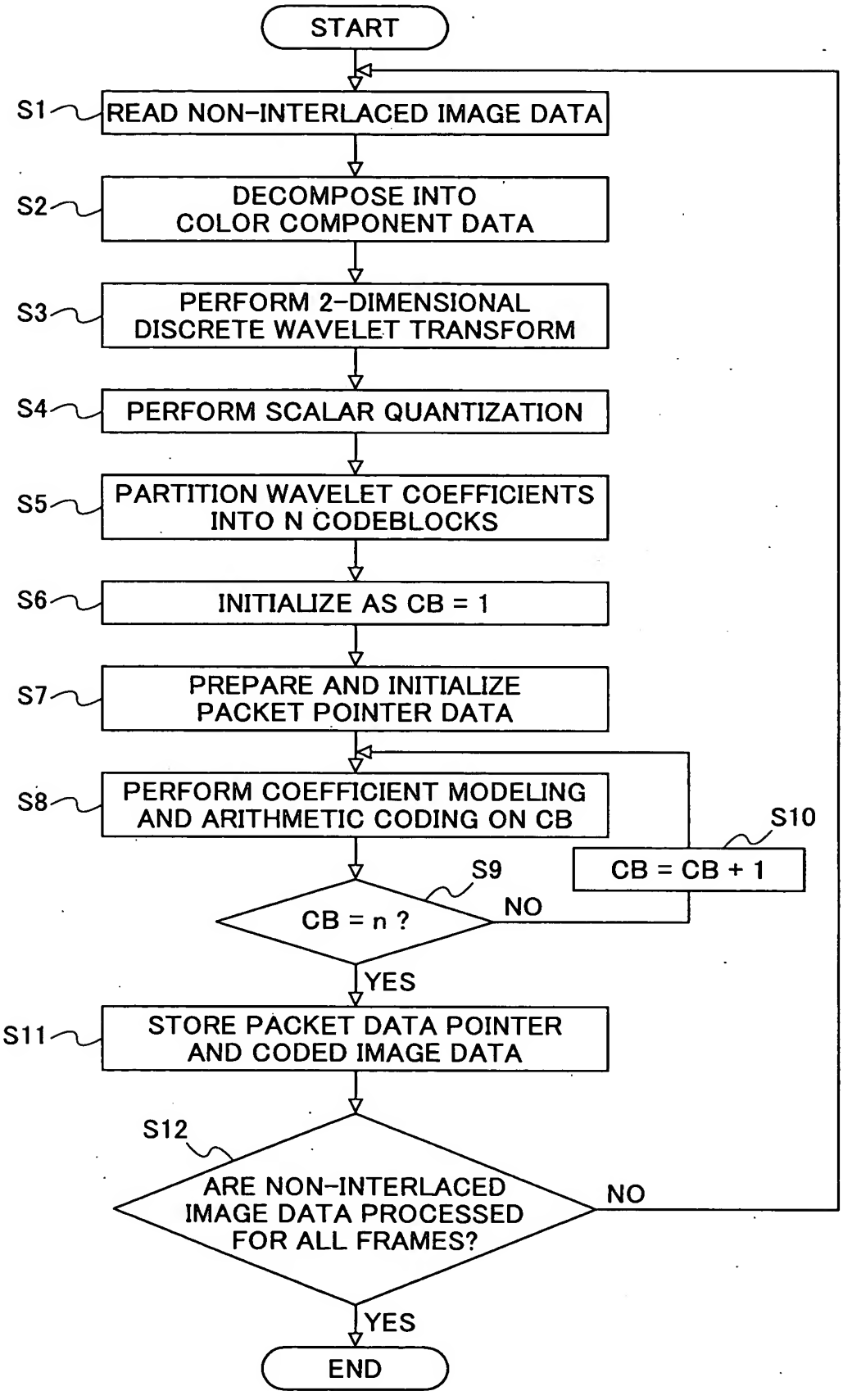
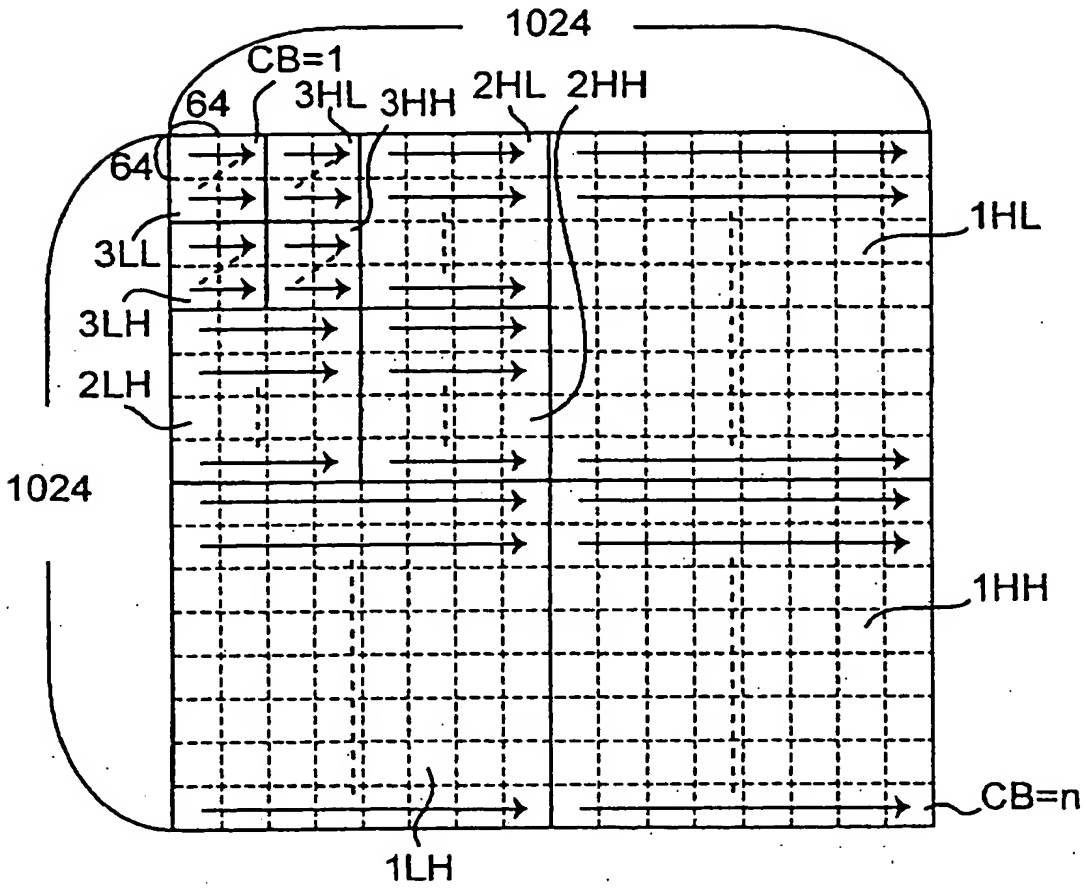

START
S1
READ NON-INTERLACED IMAGE DATA
S2
DECOMPOSE INTO COLOR COMPONENT DATA
S3
PERFORM 2-DIMENSIONAL DISCRETE WAVELET TRANSFORM
S4
PERFORM SCALAR QUANTIZATION
S5
PARTITION WAVELET COEFFICIENTS INTO N CODEBLOCKS
S6
INITIALIZE AS CB = 1
S7
PREPARE AND INITIALIZE PACKET POINTER DATA
S8
PERFORM COEFFICIENT MODELING AND ARITHMETIC CODING ON CB
S10
CB = CB + 1
S9
CB = n ?
NO
YES
S11
STORE PACKET DATA POINTER AND CODED IMAGE DATA
S12
ARE NON-INTERLACED IMAGE DATA PROCESSED FOR ALL FRAMES?
NO
YES
END

FIG.6



SCANNING ORDER:
3LL->3HL->3LH->3HH->2HL->2LH->2HH->1HL->1LH->1HH

FIG.7

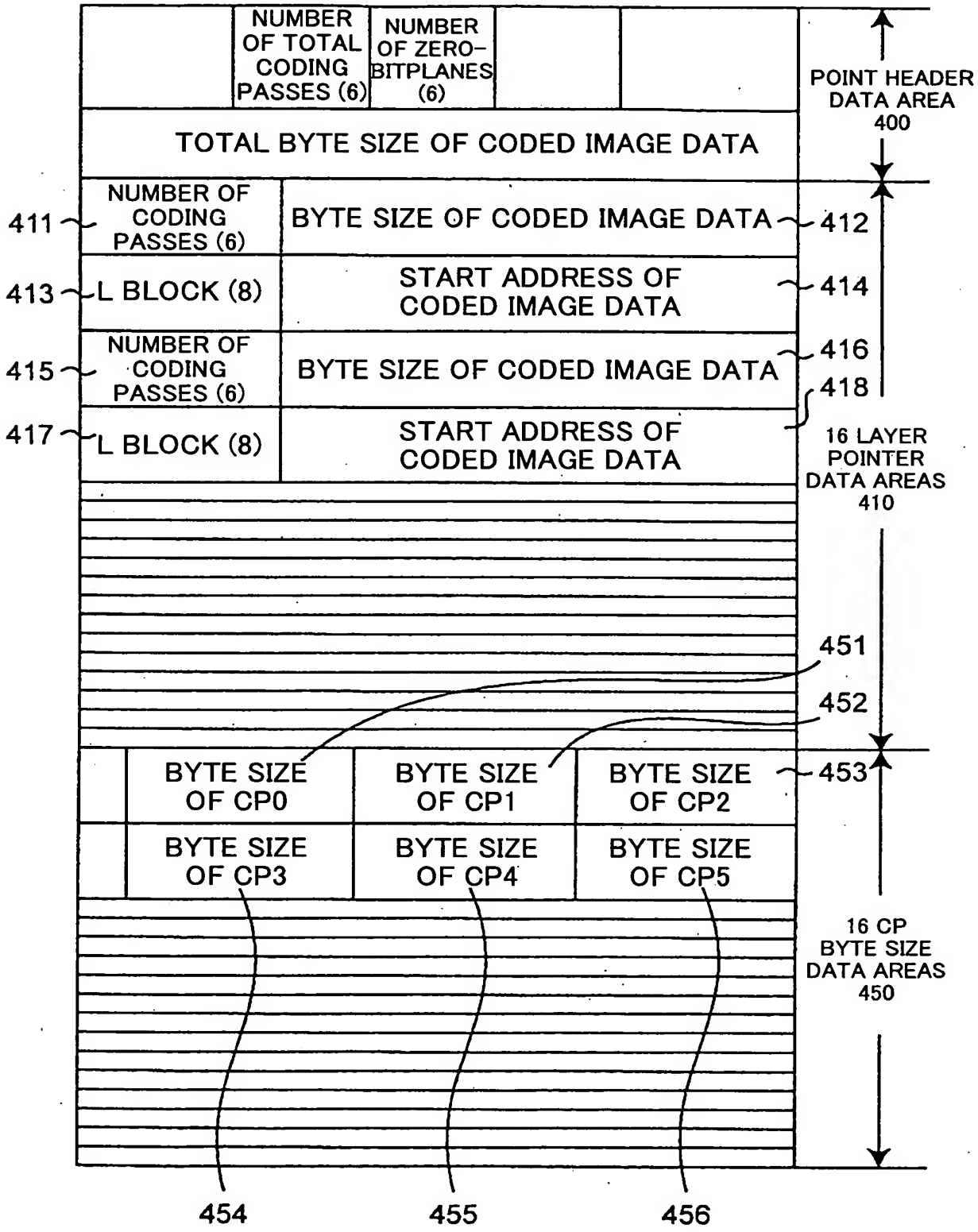

NUMBER OF TOTAL CODING PASSES (6)
NUMBER OF ZERO-BITPLANES (6)
TOTAL BYTE SIZE OF CODED IMAGE DATA
POINT HEADER DATA AREA 400
411
NUMBER OF CODING PASSES (6)
BYTE SIZE OF CODED IMAGE DATA
412
413
L BLOCK (8)
START ADDRESS OF CODED IMAGE DATA
414
415
NUMBER OF CODING PASSES (6)
BYTE SIZE OF CODED IMAGE DATA
416
418
417
L BLOCK (8)
START ADDRESS OF CODED IMAGE DATA
16 LAYER POINTER DATA AREAS 410
451
452
BYTE SIZE OF CP0
BYTE SIZE OF CP1
BYTE SIZE OF CP2
453
BYTE SIZE OF CP3
BYTE SIZE OF CP4
BYTE SIZE OF CP5
16 CP BYTE SIZE DATA AREAS 450
454
455
456

FIG.8

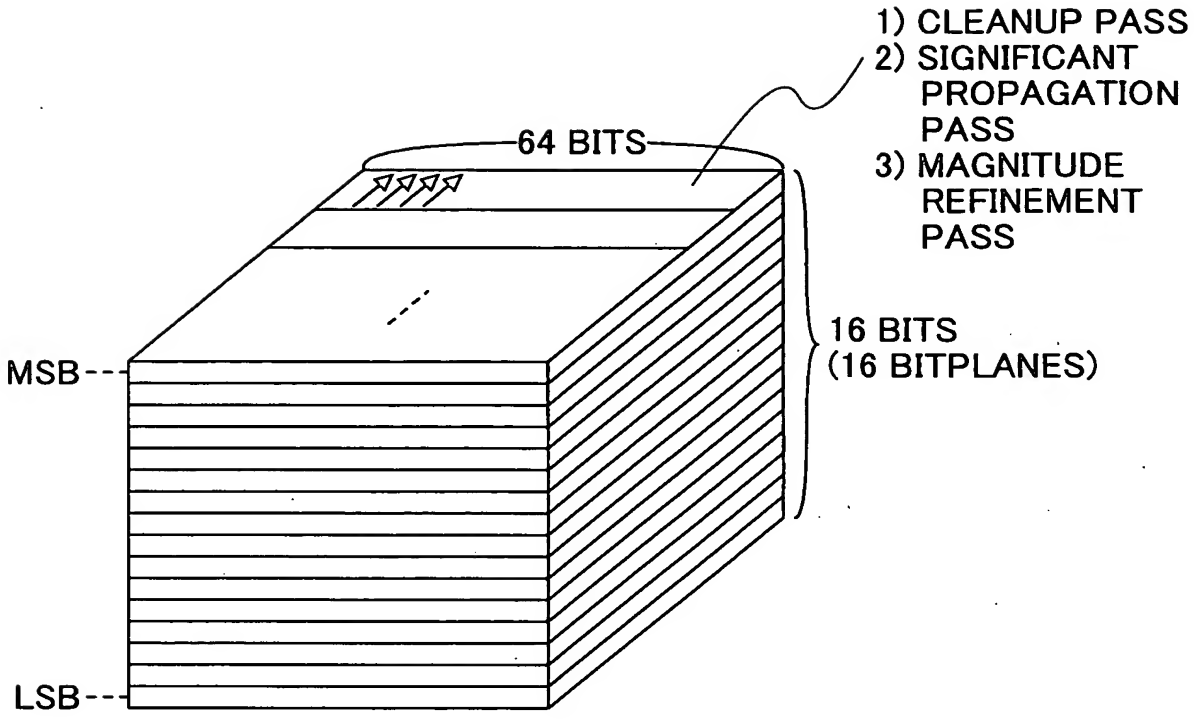

1) CLEANUP PASS
2) SIGNIFICANT PROPAGATION PASS
3) MAGNITUDE REFINEMENT PASS
64 BITS
16 BITS
(16 BITPLANES)
MSB
LSB

FIG.9

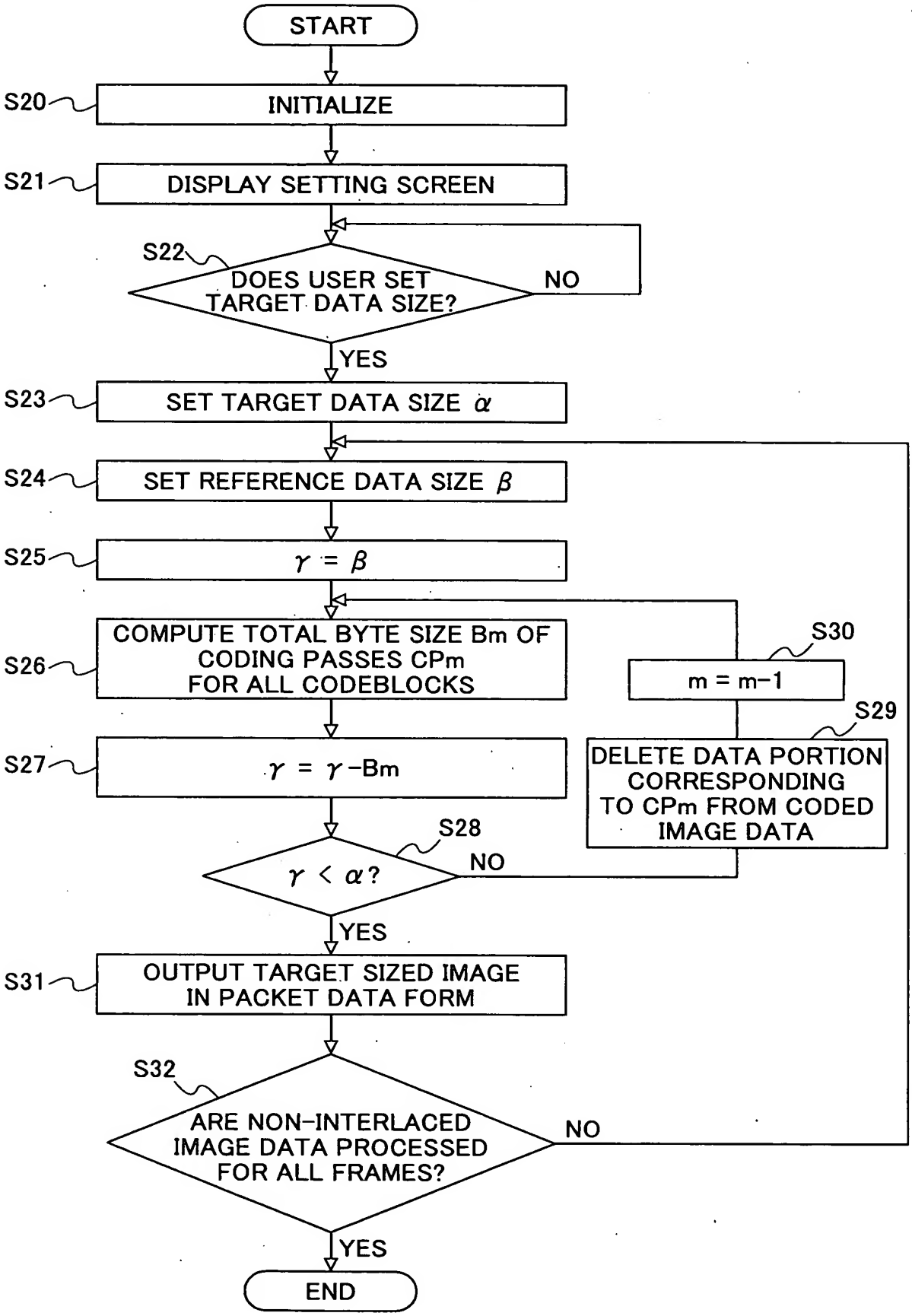

START
S20
INITIALIZE
S21
DISPLAY SETTING SCREEN
S22
DOES USER SET TARGET DATA SIZE?
NO
YES
S23
SET TARGET DATA SIZE α
S24
SET REFERENCE DATA SIZE β
S25
γ = β
S26
COMPUTE TOTAL BYTE SIZE Bm OF CODING PASSES CPm FOR ALL CODEBLOCKS
S27
γ = γ−Bm
S28
γ < α?
NO
YES
S29
DELETE DATA PORTION CORRESPONDING TO CPm FROM CODED IMAGE DATA
S30
m = m−1
S31
OUTPUT TARGET SIZED IMAGE IN PACKET DATA FORM
S32
ARE NON-INTERLACED IMAGE DATA PROCESSED FOR ALL FRAMES?
NO
YES
END

FIG.10

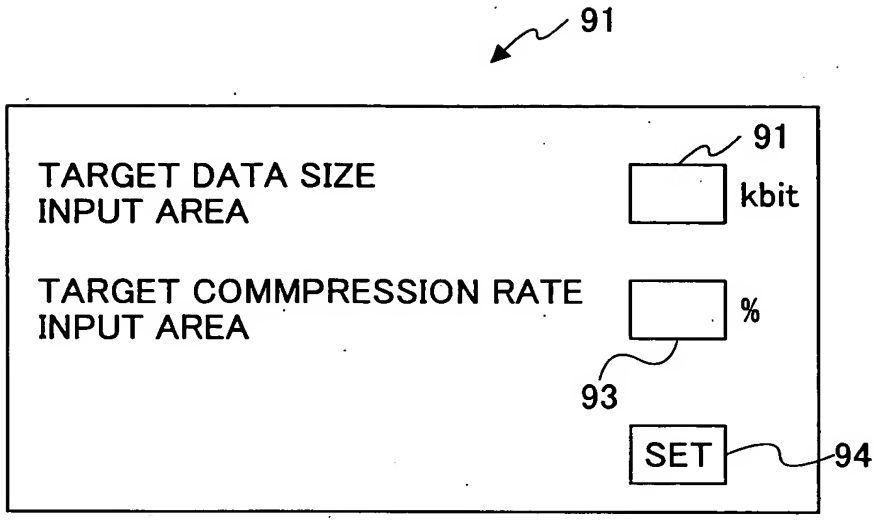
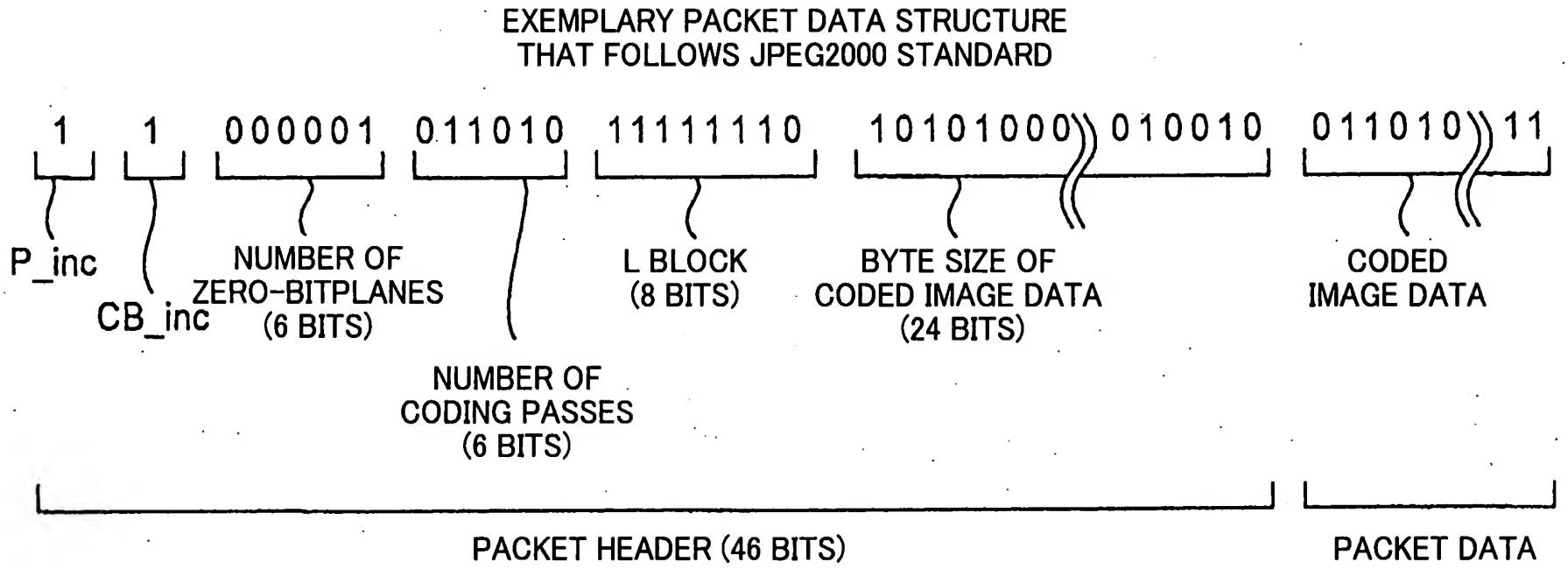

91
91
TARGET DATA SIZE
INPUT AREA
kbit
TARGET COMMPRESSION RATE
INPUT AREA
%
93
SET
94

FIG.11


EXEMPLARY PACKET DATA STRUCTURE
THAT FOLLOWS JPEG2000 STANDARD
1
1
000001
011010
11111110
10101000
010010
011010
11
P_inc
CB_inc
NUMBER OF
ZERO-BITPLANES
(6 BITS)
NUMBER OF
CODING PASSES
(6 BITS)
L BLOCK
(8 BITS)
BYTE SIZE OF
CODED IMAGE DATA
(24 BITS)
CODED
IMAGE DATA
PACKET HEADER (46 BITS)
PACKET DATA